-continued

<223> OTHER INFORMATION: H5/Indo on H1/New Cal Stem - E1-RB-E2 H5/Indo

<400> SEQUENCE: 141

Ser Glu Leu Glu Tyr Gly Asn
1 5

<210> SEQ ID NO 142
<211> LENGTH: 9
<212> TYPE: PRT
<213> ORGANISM: Artificial Sequence
<220> FEATURE:
<223> OTHER INFORMATION: H5/Indo on H1/New Cal stem - F2-stop H1/NC

<400> SEQUENCE: 142

Cys Asp Ala Lys Cys Gln Thr Pro Gln
1 5

<210> SEQ ID NO 143
<211> LENGTH: 26
<212> TYPE: PRT
<213> ORGANISM: Artificial Sequence
<220> FEATURE:
<223> OTHER INFORMATION: Signal peptide of alfalfa protein disulfide isomerase gene

<400> SEQUENCE: 143

Met Ala Lys Asn Val Ala Ile Phe Gly Leu Leu Phe Ser Leu Leu Leu
1 5 10 15

Leu Val Pro Ser Gln Ile Phe Ala Glu Glu
20 25

What is claimed is:

1. A nucleic acid comprising one or more regulatory regions comprising a promoter, the promoter recognized by RNA polymerase 2 and operatively linked to a sequence encoding a chimeric influenza hemagglutinin (HA) polypeptide comprising a stem domain cluster (SDC), a head domain cluster (HDC) and a transmembrane domain cluster (TDC), the one or more regulatory regions further including a 5'UTR and 3'UTR, and wherein

a) the SDC comprises an F'1, F'2 and F subdomain;

b) the HDC comprises receptor binding (RB) subdomain, vestigial esterase subdomain E1 (E1) and vestigial esterase subdomain E2 (E2);

c) the TDC comprises a transmembrane (TmD) and C terminal tail (CT) subdomain; and

wherein the RB subdomain is of a first influenza HA polypeptide, the SDC, the E1, the E2, and the TDC subdomains are from a second influenza HA polypeptide, and wherein the first influenza HA polypeptide is from influenza H1 or H5, and the second influenza HA polypeptide is from influenza H1 or H5, and the second influenza HA is derived from a different influenza strain than the first influenza polypeptide, wherein the F'1 subdomain is fused to a native or plant derived signal peptide, and the 3'UTR and 5'UTR is heterologous to the first, and the second, influenza HA.

2. The nucleic acid of claim **1**, wherein the sequence encoding a chimeric influenza HA polypeptide further comprises a signal peptide sequence selected from the group consisting of an HA native signal peptide sequence, and an alfalfa PDI signal peptide sequence.

3. The nucleic acid of claim **1**, wherein the 5'UTR and 3'UTR are obtained from a plastocyanin UTR or Cowpea Mosaic Virus (CPMV) UTR.

4. The nucleic acid of claim **1**, wherein the regulatory region is obtained from a plastocyanin regulatory region, a Ribulose 1,5-bisphosphate carboxylase/oxygenase (RuBisCO) regulatory region, a chlorophyll a/b binding protein (CAB) regulatory region, a CaMV 35S regulatory region, an actin regulatory region, a ubiquitin regulatory region, a triosephosphate isomerase 1 regulatory region, a translational initiation factor 4A regulatory region, or an ST-LSI regulatory region.

5. A method of producing chimeric influenza HA protein in a plant comprising:

a) introducing the nucleic acid of claim **1** into the plant, or portion thereof

b) incubating the plant, or portion thereof, under conditions that permit the expression of the nucleic acid, thereby producing the chimeric influenza HA protein; and

c) harvesting the plant and obtaining the chimeric influenza HA protein.

6. A polypeptide encoded by the nucleic acid of claim **1**.

7. The polypeptide of claim **6** further comprising plant-specific N-glycans or modified N-glycans.

8. A composition comprising an effective dose of the polypeptide of claim **7** and a pharmaceutically acceptable carrier.

9. A plant cell, comprising a polypeptide encoded by the nucleic acid of claim **1**.

10. A method of producing chimeric influenza virus like particles (VLPs) in a plant comprising:

a) introducing the nucleic acid of claim **3** into the plant, or portion thereof using agroinfiltration;

b) incubating the plant, or portion thereof, under conditions that permit the expression of the nucleic acid, thereby producing the chimeric VLPs; and

c) harvesting the plant and obtaining the chimeric VLPs.